

DEFENSE SCIENCE BOARD

**Background,
Biographical Sketches
and
Activities**



**Office of the
Under Secretary of Defense
for
Research & Engineering
Washington, D.C.**

1984

BACKGROUND

The Defense Science Board is the senior independent advisory body to the Department of Defense (DoD). The Board undertakes tasks that are of high personal interest to the Secretary of Defense, Under Secretary of Defense for Research and Engineering, or the Chairman of the Joint Chiefs of Staff, and prepares reports which are responsive to the tasking and which include recommendations that will have a constructive impact on DoD missions.

The Defense Science Board was established in 1956 in response to the following recommendation of the Hoover Commission:

The Assistant Secretary of Defense (Research and Development) will appoint a standing committee, reporting directly to him, of outstanding basic and applied scientists. This committee will canvass periodically the needs and opportunities presented by new scientific knowledge for radically new weapons systems.

The original membership of the Board, totaling 25, consisted of the Chairmen of the 11 technical advisory panels in the Office of the Assistant Secretary of Defense (Research and Development), the Chairmen of the senior advisory committees of the Army, the Navy and the Air Force, the Directors of the National Science Foundation, the National Bureau of Standards and the National Advisory Committee for Aeronautics (predecessor of the National Aeronautics and Space Administration), the President of the National Academy of Sciences, and seven members-at-large drawn from the scientific and technical community.

The Board met for the first time on 20 September 1956. Its initial assignment concerned the program and administration of basic research, component research, and the advancement of state of the art in areas of interest to the Department of Defense.

On 31 December 1956, a charter specifying the Board as advisory to the Assistant Secretary of Defense (Research and Development) was issued. Following the consolidation of the offices of the Assistant Secretaries of Defense for R&D and Applications Engineering in 1957, the Board was reconstituted as advisory to the Secretary of Defense through the Assistant Secretary of Defense (Research and Engineering). Its membership was increased to 28, including as ex officio members the Chairmen of the President's Science Advisory Committee and the Scientific Advisory Committee in the Office of Guided Missiles, Office of the Secretary of Defense (OSD). A revised Board charter was issued on 30 October 1957.

In accordance with the Department of Defense Reorganization Act of 1958, which stipulated the responsibilities, functions and authority of the Director of Defense Research and Engineering (DDR&E), the Board's charter was revised on 23 November 1959. This revision restated the role and mission of the Defense Science Board in consonance with the DDR&E's responsibilities, prescribing eight members-at-large and modifying ex officio membership to conform with the establishment or dissolution of advisory panels in the office of the DDR&E.

In the course of organizing his staff, the DDR&E appointed Assistant Directors for several types of warfare systems. Following this action late in 1959, the Board made a study of the structure of scientific and engineering advisory bodies. Its report on this study (submitted by the Chairman of the Board late in 1960 to the Secretary of Defense and the DDR&E) was implemented by DoD Directive 5129.22, "Defense Science Board Charter," dated 10 April 1961. This Directive was revised and reissued on 17 February 1971. In 1978 the title, Director of Defense Research and Engineering, was changed to Under Secretary of Defense for Research and Engineering (USDRE), and this Directive was revised to reflect this change.

Currently the Board consists of 33 members, including the Chairman of the primary public advisory commit-

tees of the three Military Departments as ex officio members. The 30 members-at-large are appointed for four-year terms and are selected on the basis of their pre-eminence in the fields of science and engineering, including management and long-range planning, to represent the interests of the Under Secretary of Defense for Research and Engineering, the Secretary of Defense, and the Chairman of the Joint Chiefs of Staff. A group of senior consultants, also pre-eminent scientists and engineers, assists the Board in its deliberations.

The Board operates by forming Task Forces which address issues formally directed by the Under Secretary of Defense for Research and Engineering. A Task Force comprises Board members, Senior Consultants and outside experts selected by the Task Force Chairman with the approval of the DSB Chairman and the USDRE to insure a balanced, independent assessment of the issue in question. (Individuals wishing to serve on DSB Task Forces as DoD consultants may send brief resumes to the DSB Secretariat delineating their credentials and background in areas of their interest.)

The products of each Task Force are a set of formal briefings to the Board and appropriate DoD officials and a written report containing findings, recommendations, and a suggested implementation plan. Each report is submitted for approval to the Under Secretary of Defense for Research and Engineering and forwarded to the Secretary of Defense and the Chairman of the Joint Chiefs of Staff. After approval, the report is published as a Defense Science Board Report and is distributed to appropriate government agencies and other organizations.

The following is a listing of the current Defense Science Board principals including brief biographical data indicating current position, highest earned degree and concurrent and former affiliations. Also listed are the subject areas of Defense Science Board Task Forces over the past several years.

BIOGRAPHICAL SKETCHES

CHAIRMAN

CHARLES A. FOWLER (Electrical Engineer)
Senior Vice President, The MITRE Corporation

BS, University of Illinois

Vice President, Raytheon Company
Deputy Director of Defense Research and Engineering
(Tactical Warfare Programs)
Head, Radar Systems, Cutler-Hammer, Inc.

VICE CHAIRMAN

EUGENE G. FUBINI (Physicist)
Private Consultant

PhD, University of Rome

Vice President and Group Executive, IBM
Corporation
Deputy Director of Defense Research and
Engineering and Assistant Secretary of Defense
Vice President, Research & Systems Engineering,
AIL Corporation

DEFENSE SCIENCE BOARD SECRETARIAT

Executive Officer

Dr. Paul J. Berenson

Military Assistants

Col. Joseph Briggs, USA
CDR. M. Christian Current, USN
Lt. Col. Gayland Lyles, USMC
Lt. Col. Herbert Vadney, USAF

Administrative Assistant

Ms. Jean Keppler

MEMBERS AT LARGE

WILLIAM A. ANDERS (Nuclear Engineer)
Executive Vice President-Aerospace, Textron Inc.

MS, Air Force Institute of Technology

U.S. Ambassador to Norway
Chairman, Nuclear Regulatory Commission
Apollo 8 Crew Member

NORMAN R. AUGUSTINE (Aeronautical Engineer)
President, Martin Marietta Denver Aerospace

MSE, Princeton University

President-Elect, American Institute of Aeronautics
and Astronautics
Under Secretary of The Army
Assistant Director of Defense Research and
Engineering (Land Warfare)

IVAN L. BENNETT, JR. (Physician)
*Professor of Medicine, New York University Medical
Center*

MD, Emory University

Provost and Dean, New York University Medical
Center
Acting President, New York University
Deputy Director, Office of Science and Technology,
The White House

ELAINE R. BOND (Corporate Manager)
*Senior Vice President, Corporate Systems, Chase
Manhattan Bank, N.A.*

BS, Tufts University

Group Director of Information Systems, IBM
Corporate Director of Programming, IBM
Corporate Director of Executive Resources, IBM

JOSEPH V. BRADDOCK (Physicist)

Senior Vice President, BDM International

PhD, Fordham University

Assistant Professor of Physics, Iona College

FREDERICK P. BROOKS, JR.

(Computer Scientist)

*Kenan Professor and Chairman, Department of
Computer Science, University of North Carolina*

PhD, Harvard University

Manager, Operating System/360, IBM

Corporate Processor Manager, IBM, in charge of
development of System/360 Product Line

Architect of STRETCH and HARVEST Computers,
IBM

LEONARD F. CHAPMAN, JR.

(General, U.S. Marine Corps - Retired)

Private Consultant

BA, University of Florida

Commandant, U.S. Marine Corps

Commissioner, Immigration & Naturalization Service

Director, United States Life Insurance Company

WILLIAM P. CLEMENTS (Industrialist)

Chairman of the Board, SEDCO

Southern Methodist University

Governor of Texas

Deputy Secretary of Defense

Chairman, Board of Governors, Southern Methodist
University

VINCENT N. COOK (Industrialist)

President, Federal Systems Division, IBM

M.A., American University

Vice President, Defense & Space Systems, IBM
(FSD)

Vice President & General Manager, Command and
Space Systems, IBM (FSD)

Director, WWMCCS Architecture, IBM (FSC)

MALCOLM R. CURRIE (Electrical Engineer)

Executive Vice President, Hughes Aircraft

Company

PhD, University of California at Berkeley

Director of Defense Research and Engineering

Vice President, Research & Development, Beckman
Instruments

Corporate Vice President, Hughes Aircraft Company

WILLIAM E. DePUY (General, U.S. Army-Retired)

Defense Analyst

B.S., South Dakota State University

Commanding General, Training and Doctrine
Command

Assistant Vice Chief of Staff, U.S. Army

Commander, First Infantry Division

RUSSELL E. DOUGHERTY

(General, U.S. Air Force - Retired)

Executive Director, Air Force Association

JD, University of Louisville

Commander-in-Chief, Strategic Air Command

Chief of Staff, Supreme Headquarters Allied

Powers Europe (SHAPE)

Director, Aerospace Corporation

ROBERT A. DUFFY (Aeronautical Engineer)

President, Charles Stark Draper Lab., Inc.

B.S., Georgia Institute of Technology

B. Gen, U.S. Air Force, Vice Commander, Space
and Missile Systems Organization (SAMSO)

Deputy for Re-entry Systems, SAMSO

Directors Staff Group, ODDR&E

JAMES C. FLETCHER (Physicist)

*William K. Whiteford Professor of Technology &
Energy Resources University of Pittsburgh*

PhD, California Institute of Technology

Administrator, National Aeronautics & Space
Administration

President, University of Utah

Chairman of the Board, Space General Corporation

NORMAN E. FRIEDMANN (Engineer)

*Chairman of the Board, President & Chief Executive
Officer, Cordura Corporation*

PhD, University of California, Los Angeles

Vice President, Whittaker Corporation

Group President, International Telephone &
Telegraph Company

Associate Program Director, Titan Weapon System,
TRW, Inc.

EDWARD A. FRIEMAN (Physicist)

Executive Vice President, Science Applications, Inc.

Ph.D. Polytechnic Institute of Brooklyn

Director of Energy Research, DoE

Deputy Director, Plasma Physics Laboratory, and

Professor, Astrophysical Sciences, Princeton

University

ROBERT A. FUHRMAN (Aeronautical Engineer)

*Group President Missiles, Space & Electronics Systems,
Lockheed Corporation*

MS, University of Maryland

President, Lockheed Missiles & Space Company, Inc.

President, Lockheed-California Company

President, Lockheed-Georgia Company

NORMAN HACKERMAN (Chemist)

President, Rice University & Professor of Chemistry

PhD, Johns Hopkins University

President and Professor of Chemistry, University of
Texas

Former Chairman, National Science Board, National
Science Foundation

Chairman, Science Advisory Board, Robert A. Welch
Foundation

GEORGE H. HEILMEIER (Electrical Engineer)

*Senior Vice President and Chief Technical Officer,
Texas Instruments, Inc.*

PhD, Princeton University

Director, Defense Advanced Research Projects
Agency

Director, Office of Electronics & Physical Sciences,
ODDR&E

Department Head, RCA Laboratories

DONALD A. HICKS (Industrialist)

*Senior Vice President-Marketing & Technology,
Northrop Corporation*

PhD, University of California (Berkeley)

Vice President & Manager, Northrop Research &
Technology Center

Vice President, Engineering, Ventura Division,
Northrop Corporation

Chief, Applied Physics Section, The Boeing Company

BOBBY R. INMAN (Admiral, U.S. Navy-Retired)
President and Chief Executive Officer, MCC Corporation

BA, University of Texas

Deputy Director, Central Intelligence
Director, National Security Agency
Vice Director (Plans, Operations and Support), DIA

ISSAC C. KIDD, JR. (Admiral, U.S. Navy - Retired)
Private Consultant

BS, U. S. Naval Academy

Board Member, North Atlantic Council
Commander-in-Chief, Atlantic Fleet
Chief of Naval Materiel

JOSHUA LEDERBERG (Geneticist)
President, Rockefeller University

PhD, Yale University

Professor & Chairman, Department of Genetics,
Stanford University
Professor & Chairman, Department of Genetics,
University of Wisconsin
Nobel Laureate, Medicine

WILLIAM A. NIERENBERG (Physicist)
Director, Scripps Institution of Oceanography

PhD, Columbia University

Chairman, JASON
Advisor-at-Large, State Department
Advisor, NASA Advisory Council

WILLIAM J. PERRY (Mathematician)
Executive Vice President, Hambrecht & Quist, Inc.

PhD, Pennsylvania State University

Under Secretary of Defense for Research and
Engineering
President, ESL, Inc.
Director, Electronic Defense Laboratories, GTE
Sylvania

HAROLD ROSENBAUM (Astronautics)
President, Rosenbaum Associates, Inc.

PhD, Polytechnic Institute of Brooklyn

Staff Assistant to General Manager, AVCO
Systems Division
Professional Staff Member, House Committee on
Armed Services

LEONARD SULLIVAN, JR.

(Aeronautical Engineer)

Private Consultant

AE, Massachusetts Institute of Technology

Assistant Secretary of Defense (Program Analysis
and Evaluation)
Principal Deputy and Deputy Director of Defense
Research and Engineering (Southeast Asia Affairs)
Manager of Advanced Systems, Grumman
Corporation

IVAN E. SUTHERLAND (Electrical Engineer)

Private Consultant

PhD, Massachusetts Institute of Technology

Professor of Computer Science, California
Institute of Technology
Vice President & Chief Scientist, Evans &
Sutherland Corporation
Professor of Electrical Engineering, University of
Utah

CHARLES H. TOWNES (Physicist)
*University Professor of Physics, University of California
at Berkeley*

PhD, California Institute of Technology

Professor and Provost, Massachusetts Institute of
Technology
Vice President, Institute for Defense Analyses
Nobel Laureate, Physics

EX OFFICIO MEMBERS

CHAIRMAN, ARMY SCIENCE BOARD

WILSON K. TALLEY (Nuclear Engineer)

Professor, Department of Applied Science, University of California, Davis

PhD, University of California-Berkeley

Special Assistant to Secretary of Health, Education
and Welfare

Assistant Administrator for Research & Development,
Environmental Protection Agency

CHAIRMAN, NAVAL RESEARCH ADVISORY COMMITTEE

DAVID R. HEEBNER (Electrical Engineer)

Executive Vice President, Science Applications, Inc.

MSEE, University of Southern California

Deputy Director of Defense Research and
Engineering (Tactical Warfare Programs)

Assistant Director of Sea Warfare Systems, ODDR&E
Systems Manager, Hughes Aircraft Company

CHAIRMAN, AIR FORCE SCIENTIFIC ADVISORY BOARD

EUGENE E. COVERT (Aeronautical Engineer)

Director & Professor,

Center for Aerodynamic Studies

Department of Aeronautics & Astronautics

Massachusetts Institute of Technology

ScD, Massachusetts Institute of Technology

Chairman, Foreign Technology Division Advisory
Group, Air Force Systems Command

Chief Scientist, U.S. Air Force

Aerodynamics Engineer, Naval Air Development
Center

SENIOR CONSULTANTS

DAVIS B. BOBROW (Political Scientist)
Professor of Government and Politics, University of Maryland

PhD, Massachusetts Institute of Technology

Professor of Political Science and Director of Center
for International Studies, University of Minnesota
Special Assistant, Behavioral and Social Sciences,
ODDR&E and Acting Director, Behavioral
Sciences Office, DARPA
Senior Social Scientist, Director's Division, Oak
Ridge National Laboratory

SOLOMON J. BUCHSBAUM (Physicist)
Executive Vice President, Customer Systems, Bell Laboratories

PhD, Massachusetts Institute of Technology

Chairman, White House Science Council
Vice President, Network Planning and Customer
Services, Bell Laboratories
Vice President, Sandia Laboratories

JOHN M. DEUTCH (Chemist)
Dean of Science, Massachusetts Institute of Technology

PhD, Massachusetts Institute of Technology

Professor & Chairman, Department of Chemistry,
Massachusetts Institute of Technology
Under Secretary, Department of Energy
Member, President's Nuclear Safety Oversight
Committee

DANIEL J. FINK (Aeronautical Engineer)
President, D. J. Fink Associates, Inc.

MS, Massachusetts Institute of Technology

Senior Vice President, Corporate Planning &
Development, General Electric Company
Vice President & Group Executive, Aerospace
Group, General Electric Co.
Deputy Director of Defense Research and
Engineering (Strategic and Space Systems)

ALEXANDER H. FLAX (Aeronautical Engineer)
Institute for Defense Analyses

PhD, University of Buffalo

Assistant Secretary of The Air Force for Research
& Development
Vice President & Technical Director, Cornell
Aeronautical Laboratory
Chief Scientist, Department of The Air Force

JOHN S. FOSTER, JR. (Physicist)
Vice President, Science & Technology, TRW, Inc.

PhD, University of California at Berkeley

Director of Defense Research and Engineering
Director, Lawrence Livermore Laboratory
Division Head, Lawrence Radiation Laboratory

RICHARD LATTER (Physicist)
Vice President, R&D Associates

PhD, California Institute of Technology

Research Council, The Rand Corporation
Division Head, Physics Division, The Rand
Corporation
Member, U.S. Delegation to SALT

HAROLD W. LEWIS (Physicist)

*Professor of Physics, University of California at
Santa Barbara*

PhD, University of California at Berkeley

Professor of Physics, University of Wisconsin
Member of Technical Staff, Bell Laboratories
Assistant Professor of Physics, University of
California

MICHAEL M. MAY (Physicist)

*Associate Director at Large, Lawrence Livermore
National Laboratory*

PhD, University of California at Berkeley

Member, U.S. Delegation to SALT
Director, Lawrence Livermore Laboratory
Fellow, Center for International Affairs, Princeton
University

DONALD B. RICE (Economist, Engineer)

President, The Rand Corporation

PhD, Purdue University

Assistant Director, Office of Management and
Budget
Deputy Assistant Secretary of Defense
(Resource Analysis)
Assistant Professor of Management, Naval
Postgraduate School

HENRY S. ROWEN (Economist)

Stanford University

BS, Massachusetts Institute of Technology

Professor of Public Management, Stanford University
President, The Rand Corporation
Deputy Assistant Secretary of Defense (International
Security Affairs)

RECENT DSB TASKS

(Year of Report Publication)

1979

NATO Family of Weapons
Navy Counter C³
U.S. Ballistic Missile Defense
Surface Ship Vulnerability
Enduring Strategic Communications,
Command & Control
Strategic Planning and the Maritime Balance
V/STOL Aircraft
Capabilities for Theater Nuclear Forces
High Energy Lasers

1980

Soviet Ballistic Missile Defense
Monopulse Countermeasures
Reducing the Unit Cost of Equipment
Comprehensive Test Ban
M-X
Particle Beam Technology
Cruise Missiles
EMP Hardening of Aircraft

1981

Chemical Warfare
Industrial Responsiveness
Anti-Tactical Missiles, Phase I
Review of DoD Space Based Laser Weapons Study
Space Applications
Water Support of U.S. Forces in an Arid Environment
Standoff Target Acquisition System (SOTAS)
Strategic Defense
Technology Base
Operational Readiness with High Performance Systems
Monopulse Countermeasures

1982

University Responsiveness
Very High Speed Integrated Circuits (VHSIC)
Review of the Defense Nuclear Agency Technology
Base Program
Forward Area Laser Weapons
Structural Hardening of the B-52
AUTODIN II
Embedded Computer Resources
Contractor Field Support
Mapping, Charting and Geodesy
Technology for Rapid Deployment Forces
Electronic Warfare
New Weapons Concepts
Training and Training Technology
M-X Closely Spaced Basing

1983

Continuous Patrol Aircraft
Application of High Technology for Ground Operations
Command Support
Industry-to-Industry International Armaments
Cooperation: Phase I NATO Europe
Autorecognition
Anti-Tactical Missiles, Phase II
Transition of Weapons Systems for Development to
Production
Reconnaissance Regimes
Joint Service Acquisition Programs
Conventional Munitions and the Nuclear Threshold
NATO TacAir Ground Survivability